X.13

G•R•A•D•E

12

Diploma Examination Development Process

For more information, call the Associate Director of Examination Development for Language Arts and Social Studies or the Associate Director of Examination Development for Mathematics and Sciences at 427-2948.

Alberta

EDUCATION

Student Evaluation and Records

September 1988

The staff of the Student Evaluation and Records Branch gives great care and attention to the development and marking of all diploma examinations in order to ensure that students' marks on diploma examinations are fair and equitable measures of their achievement.

Many individuals work with the professional staff from the Student Evaluation and Records Branch in the complex process of developing diploma examinations. These include classroom teachers, school and jurisdiction administrators, and representatives from post-secondary institutions, the Curriculum Design Branch, Language Services Branch, and Regional Offices of Education.

The examination development process follows the phases listed below:

1 Planning

2 Approving Examination Blueprints

3 Developing Examination Questions

4 Constructing and Administering Field Tests

5 Analysing and Revising Questions

6 Constructing the Examinations

7 Approving the Examinations

8 Printing and Administering the Examinations

9 Marking the Examinations

10 Analysing and Reporting the Results

It takes approximately 18 months to complete the development of a diploma examination.

1

Planning

The first step in the planning phase for development of a diploma examination is the preparation, under the direction of the Curriculum Design Branch, of specifications based on the goals and objectives of the curriculum for each subject.

Examination developers in each diploma examination subject area then prepare an interim examination blueprint (an overall plan used to guide the development of an examination). If a diploma examination is undergoing extensive revision because of curricular change, or if a new examination is to be developed, an advisory committee of teachers and subject consultants will contribute to decisions about the emphasis and design of the examination.

Questions that must be addressed by examination developers and advisory committees, as examinations are designed and blueprints are drafted, include:

- What knowledge and skills can students be expected to possess?
- How can the various parts of the curriculum best be tested?
- What should be the weighting for each part of the curriculum that is tested?
- How long and how demanding should the examination be?
- What format will produce the most valid results?
- What types of questions will be most valid and reliable? (multiple choice, short answer, extended written response?)
- How should the examination be organized in order to produce valid and reliable results?
- How will students' responses be scored? What will be the criteria for scoring?
- How should the results be reported?
- Who will receive the results?

In order to ensure that each examination is a fair and equitable measure of students' accomplishments in the course, and to ensure that results will be meaningful and reliable, examination developers incorporate statistical as well as curricular standards into the examination design.

Statistical standards include projected examination means, range of question difficulty, and requirements for reporting. For example, the average score of each diploma examination has been set at 65 per cent. This is the mid-point between chance selection (25 per cent) and perfection (100 per cent) rounded off to the nearest five per cent. The range of difficulty of multiple-choice questions is expected to vary from 30 per cent to 85 per cent to ensure that students with varying ability levels are challenged. Each dimension of the curriculum for which results are reported must contain at least six questions if the results are to be meaningful.

2

Approving Examination Blueprints

Once examination developers and their advisory committees develop an examination design and blueprint including criteria for scoring written response, the proposed design is reviewed by a committee of Alberta Education personnel representing Regional Offices of Education, the Curriculum Design Branch (or Language Services Branch), and the Student Evaluation and Records Branch.

The blueprint and design recommended by the Alberta Education committee are then reviewed by an Examination Review Committee that consists of representatives nominated by the Alberta Teachers' Association, the Conference of Alberta School Superintendents, the Universities Co-ordinating Council, the Public Colleges of Alberta, and Alberta Education. This committee makes recommendations regarding the examination design to the Director of the Student Evaluation and Records Branch.

3

Developing Examination Questions

Following approval of the examination design, format, and blueprints, examination developers plan for question development. On the recommendations of superintendents, qualified classroom teachers from across the province are selected to work on question development committees chaired by examination developers from the Student Evaluation and Records Branch.

Teachers serving on question development committees receive the necessary training regarding technical principles of question construction from the professional examination development staff of the Student Evaluation and Records Branch. The teacher committees develop questions that meet the curricular and technical standards incorporated in the examination design and blueprints, and that will fairly test the skills and concepts that students can be expected to have acquired.

Questions developed in committee are then carefully screened, edited, and revised so that all blueprint requirements and technical standards are met. At this point, copyright approval is sought for testing materials such as literary selections, cartoons, graphs, maps, charts, data sets, etc.

4

Constructing and Administering Field Tests

Examination developers at the Student Evaluation and Records Branch construct field tests containing questions developed by teacher committees. Each field test is carefully edited and revised in order to ensure technical and curricular validity and faithfulness to the examination blueprint.

School jurisdiction personnel grant permission for the administration of field tests to students in their systems in January and/or June of each school year.

Based on the geographic and demographic variables expected for the total population that will write a given diploma examination, the Student Evaluation and Records Branch field testing administration staff selects a minimum sample of 250 students to write each field test. Field tests are administered only to students who are nearing completion of the diploma examination subject being tested so that their performances on the field test will be predictive of the performances of students writing the diploma examination.

Student Evaluation and Records Branch professional staff members administer the field tests under secured examination conditions. This procedure allows examination developers to receive first-hand information from teachers and students about examination questions and formats. As well, the procedure ensures test security and uniform administration conditions so that statistical results can be considered reliable.

Teachers whose classes participate in field testing comment on:

- level of difficulty of questions
- curricular validity
- appropriateness of questions, data sets, reading selections, format
- problems with questions, stimulus material, art work
- clarity of instructions
- correspondence between questions and the way in which a concept is taught

Students are also encouraged to discuss the field test with the field test administrator.

All of the data—statistical and anecdotal—from field testing provide the examination developer with accurate and first-hand information that is used to ensure that the final form of each diploma examination is a valid and reliable measure of students' achievement.

5

Analysing and Revising Questions

Examination developers carefully analyse the statistical results and teacher comments for each field test to determine the need for additional field testing. Individual questions or question sets requiring changes are revised and submitted for further field testing. If changes are not feasible, questions are discarded.

Those questions and question sets that prove successful in field testing are considered for inclusion in a diploma examination.

6

Constructing the Examinations

The diploma examinations are composed of questions and/or question sets that have proven to be valid in field testing. For each diploma subject, three parallel examinations are developed annually for administration in January, June, and August. The three examinations are designed to be parallel in form and equivalent in difficulty. Each examination is constructed according to the approved blueprint (i.e. each will have approximately the same number of questions testing a particular facet of the curriculum as specified by the blueprint). An information bulletin outlining the design, format, and marking criteria for each diploma examination subject is distributed to schools at the beginning of each school year. The information bulletins include changes from previous years' examinations, sample questions, and scoring guides.

Once a final form of a diploma examination is drafted, it receives extensive editing, proofreading, and technical checking.

7

Approving the Examinations

The examination developers from the Student Evaluation and Records Branch present the final form of each examination to the Alberta Education committee that represents the Curriculum Design or Language Services Branch and Regional Offices of Education for review and recommendations for improvement.

The recommendations of the Alberta Education committee are incorporated into any additional revisions that are necessary. The examination developers then present the examination to the Examination Review Committee that recommended approval of the examination blueprint in Phase Two of the Examination Development Process. The Examination Review Committee conducts a thorough review of the proposed examination, and recommends approval to the Director of the Student Evaluation and Records Branch.

8

Printing and Administering the Examinations

Following approval of the final form of a diploma examination, examination developers ensure completion of additional quality checks that include: editing, proofreading, validating of correct answers by a teacher committee, checking print quality of art work and illustrations, confirming precise match to the blueprint, and completing a final estimate of difficulty for each question.

Each examination is printed and then distributed to schools just prior to the administration dates.

Schools are responsible for ensuring the security of examinations prior to administration, and for ensuring that examinations are administered according to regulations. Each school receives extra copies of the January and June examinations for use in the school.

Administration of diploma examinations is scheduled annually in January, June, and August, and is conducted according to set regulations. Schedules and regulations are published in the *General Information Bulletin* that is distributed to schools each September. Additional copies are available for purchase from the Learning Resources Distributing Centre (telephone 427-2767). The August examinations are confidential and therefore are secured.

Students who have been identified as having learning and/or physical disabilities may apply for special provisions for examination writing. Included in the special provisions available to such students are the following: brailled examinations, large-print examinations, tape-recorded examinations, additional writing time, use of a word processor, use of a tape recorder for responses, and use of a sign-language translator. The complete policy for special provisions is printed in the *General Information Bulletin* and is available on request from the Student Evaluation and Records Branch (telephone 427-5306). Following administration, completed examinations are shipped (in accordance with security regulations) to Alberta Education in Edmonton for processing and marking.

9

Marking the Examinations

Markers for the written response parts of the examinations are nominated by their superintendents and are selected on a proportional basis so that the percentage of markers selected from a geographic area is comparable to the percentage of papers from that area. In order to be selected for marking, a teacher must be currently teaching the subject he or she wishes to mark, must have taught the course for at least two years, and must possess a valid Alberta Teaching Certificate.

The written response parts of the diploma examinations are all marked in Edmonton. The selected classroom teachers are trained in the marking procedures and are supervised during the marking session by the professional staff from the Student Evaluation and Records Branch.

All student and school identification is removed from the papers prior to the marking so that markers have no means of knowing the source of a paper. Written response papers in English 30, English 33, and Social Studies 30 receive three independent readings and are scored in several categories such as quality of language and expression, thought and detail, organization, etc. Students' scores are then calculated by machine. The *median* score on each dimension is the score awarded. Papers receive a fourth reading on those dimensions where the original three markers' scores are not sufficiently congruent.

Multiple-choice responses are machine scored. During the marking session, each multiple-choice examination is carefully reviewed by a group of at least 20 teachers of the subject under consideration. In this "standard-setting" review, the teachers assess the appropriateness of the standard of achievement built into the examinations.

10

Analysing and Reporting the Results

The statistical results of each examination and the recommendations of the standard setters are carefully analysed. The Examination Review Committee may be asked to review the results as well. Reports of local results in each subject are prepared for all school jurisdictions. The provincial results for each subject examined are presented in a provincial report that is distributed in April for the January administration and in September for the June administration. The provincial reports include guidelines for interpretation of results.

Individual student results are mailed about one month after the date on which the examinations were administered. Students who are dissatisfied with their results in any subject may request that their examination in that subject be rescored. The fee for rescoring is $20 per examination. The mark awarded after rescoring supersedes the initial mark.